Gravina Access Project

Airport and Floatplane Facilities and Operational Effects

Draft

Agreement 36893013
DOT&PF Project 67698
Federal Project ACHP-0922(5)

Prepared for:

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Department of Transportation
and Public Facilities
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Executive Summary

This technical memorandum evaluates the direct and indirect effects of each of the Gravina Access Project alternatives to the current and planned airport development, floatplane facilities, and to airport and floatplane operations. The general conclusions are:

- The primary direct effect on the airport property is the need for right-of-way for the airport circulation road. The proposed road layout has been located to avoid impacting airport facilities.
- The primary impacts to the airport terminal parking and circulation system are as a result of the increased number of vehicles anticipated to drive to and park at the airport. To accommodate the increased parking demand, a parking structure would be required near the terminal area.
- The bridge alternatives would pass over the Ketchikan International Airport (KIA) floatplane base and transient dock with sufficient clearance to allow the continued operation of the base in the same location. The bridges could, however, affect floatplane landing and takeoff areas, particularly the takeoff and landing area associated with the floatplane base at KIA. Relocating the floatplane base or redesignating operating areas are potential options for dealing with the effects on the landing and takeoff area.
- The location of the piers could hamper the ability of floatplane pilots to maneuver into and out of the floatplane base and could make some of the floatplane parking ramps or slips unusable.
- Vehicle access to the transient floatplane dock, currently provided by a road and ramp, could be affected based on final location of the parking structure.
- Due to the proximity to the transient floatplane ramp, the ramp and dock would likely need to be relocated, at least during construction, and could require permanent relocation or realignment.
- The bridges associated with Alternatives C3(a) and C4 (200 feet high) each penetrate the imaginary surface of the airport. Federal Aviation Administration's (FAA) final airspace determination on impacts is not yet known. According to FAA, however, the effects of the penetrations "can be mitigated through marking and lighting."
- Airport users would be affected by the project alternatives during construction. The main impacts would be relocation and/or temporary closures of floatplane facilities and/or the airport ferry dock during construction.
- Discussions with Alaska Airlines, airport management, Alaska Department of Transportation and Public Facilities (DOT&PF), and FAA have not identified substantial operational effects to approach or departure procedures or general operating conditions at KIA.
- Each of the bridge Alternatives C3(a), C3(b), C4 cross the KIA Floatplane Landing and Takeoff Area in the southeast third of the operating area. Keeping the base at KIA near to the bridge crossing and allowing operations on either side of it would maximize operational flexibility and minimize taxiing time. The operating areas should be set back from the bridge a sufficient distance to allow

for an aborted landing and go-around. The F3 alignment is far enough away from the KIA takeoff and landing area for planes to climb over the bridge on the East Channel.

- The ferry option G3 would cross the Ketchikan Harbor Seaplane Floats landing and takeoff area at its most northern end; ferry option G2 crosses the KIA landing and takeoff area at its northwest end and the existing ferry and ferry option G4 cross near its southeast end. Floatplane traffic would have to contend with additional ferry traffic traversing perpendicular to the floatplane operations at these locations.
- The proposed roadway around the airport to the south could conflict with the runway and or runway safety area plans. A cut and cover tunnel has been proposed as a long-term solution to the potential conflict. The improved access and circulation road at the airport would open up potential airport development space at the northwest end of the airport.

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1.0 Introduction

1.1 Overview

The Alaska Department of Transportation and Public Facilities (DOT&PF) is evaluating the engineering, economic, and environmental feasibility of various options for providing improved access between Gravina Island and Revillagigedo Island. As a component of this study, DOT&PF and HDR Alaska, Inc. (HDR) conducted an assessment of the potential impacts of the proposed Gravina Access Project alternatives on Ketchikan International Airport's (KIA) existing and planned facilities and operations.

This technical memorandum evaluates the direct and indirect effects of each of the Gravina Access Project bridge alternatives (D1, C3(a), C3(b), C4, F3), the three improved ferry alternatives (G2, G3, and G4), and the no action alternative to the current airport property and its ability to deliver service to airport travelers, tenants, employees, and carriers. The assessment also evaluates the alternatives to determine their direct and indirect effect on the expansion plans outlined in the Ketchikan International Airport (KIA) Master Plan.

For the purposes of this analysis, direct effects are those effects that are caused by the alternative and occur at the same time and place. Indirect effects are caused by the alternative but would occur later in time or are further removed in distance, and are also reasonably foreseeable.

1.2 Methods

The assessment of the potential effects of the Gravina Access Project alternatives was based primarily on the review of existing and proposed airport operations and facilities, and interviews and consultations with airport management, DOT&PF airport planners, and the Federal Aviation Administration (FAA). The Gravina Access Project study team has met on multiple occasions during the study with airport management, DOT&PF and FAA staffs, and airport users (i.e., airlines, airport tenants) to obtain their input on the project alternatives. DOT&PF and HDR staff met with the current airport manager on multiple occasions to discuss the Gravina Access Project planning process and alternatives as they related to the KIA master planning process. Discussions focused on how the proposed alternatives may affect existing airport facilities and operations, as well as the concepts of the KIA Master Plan, which is concurrently under development. DOT&PF staff involved with the airport master planning process were also consulted regarding how the alternatives may affect airport master plan goals, objectives, and concepts under consideration.

1.3 Airport Facilities and Operations Summary

KIA is located on Gravina Island across Tongass Narrows from the City of Ketchikan, and is accessed via a ferry service operated by the Ketchikan Gateway Borough. The airport receives regularly scheduled jet service and supports many air taxi operators serving the surrounding communities. The airport has approximately 16,331 annual operations (HDR 1999). Airport facilities include one paved and lighted 7,500-foot runway (11/29) and two paved taxiways (A and B). Taxiway B provides access between the general aviation (GA) apron and the terminal apron. The airport is constrained by the topography of Gravina Island, with mountains to the west and Tongass Narrows to the east. The runway's orientation is the only practical alignment, given the physical setting. There is one aircraft apron located to the northeast of the runway and divided into four separate functional apron areas to accommodate air carrier, air taxi, general aviation, and air cargo aircraft.

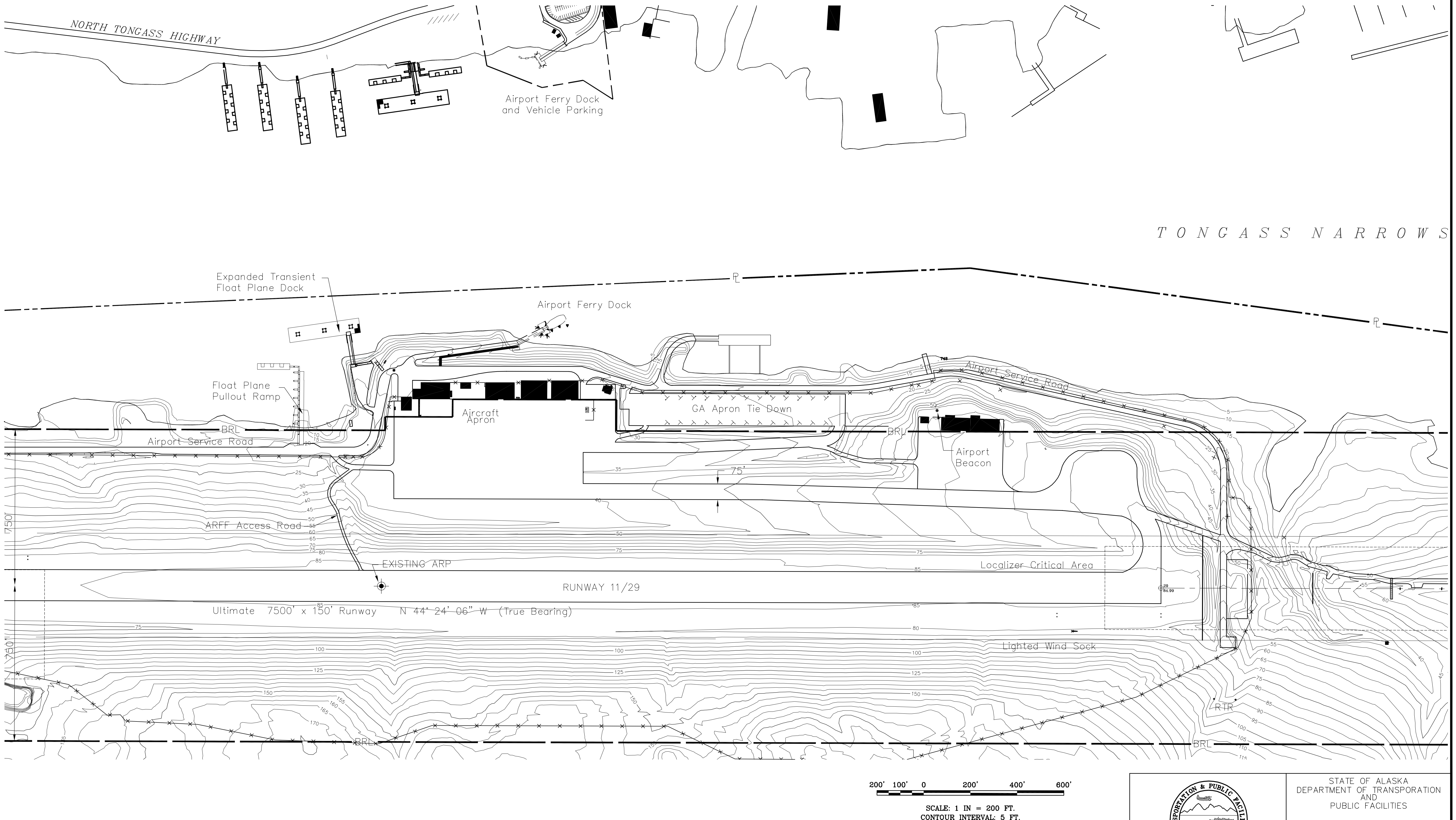
In addition to facilities for wheeled aircraft, the airport also accommodates floatplanes at two floating facilities and a ramp east of the runway. One of the floatplane facilities provides docking for up to three transient aircraft; the second facility can accommodate up to 12 Twin Otter aircraft and is used for loading and unloading passengers and freight. A concrete ramp, located nearby, is used for removing floatplanes for maintenance and storage purposes. The floatplane facilities at KIA average approximately 7,000 operations annually.

Figure 1 illustrates the existing airport layout.

1.4 Airport Operating and Development Conditions

This section presents a summary of the airport operating and development conditions in Tongass Narrows. This summary is based on an earlier technical memorandum that thoroughly documents KIA and general aviation conditions in Tongass Narrows, entitled *Tongass Narrows Aviation Conditions Summary* (HDR 1999). The analysis indicates that Tongass Narrows presents several unique challenges with respect to aviation and airport development. Aviation conditions in Tongass Narrows are complex and challenging, featuring high volumes of air traffic coupled with steep topography, frequently poor weather conditions, and special regulations for aircraft operations. Primary considerations for airport development documented in this memorandum include the following:

- KIA is located on Gravina Island across Tongass Narrows from the City of Ketchikan (on Revillagigedo Island) and the majority of the population served by the airport.
- The topography of Tongass Narrows, Gravina Island, and Revillagigedo Island largely dictate aviation operations and airport expansion opportunities.
- There are a very high number of operations, particularly floatplane operations, occurring in a relatively small and constrained space.
- Weather conditions (low-ceiling and low-visibility conditions with winds) complicate aviation operations.
- Special federal aviation regulations specifically govern operations in the Tongass Narrows. Impacts to aviation operations associated the special VFR flight rules are further discussed in the technical memorandum entitled *Special Visual Flight Rules Analysis* (HDR 2001).



STATE	PROJECT DESIGNATION
ALASKA	67698

HDR ALASKA, INC.

STATE OF ALASKA
DEPARTMENT OF TRANSPORATION AND PUBLIC FACILITIES

EXISTING KETCHIKAN AIRPORT FACILITIES

DATE: 11/13/01 FIGURE 1

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The *Tongass Narrows Aviation Conditions Summary* (HDR 1999) should be consulted for further discussion of the existing airport operating conditions.

1.5 Gravina Access Project Alternatives

Table 1 identifies the different access alternatives being considered in the Gravina Access Project, and shows the name (letter and number code) used in the various maps and other technical memoranda.

Table 1. Description of Access Alternatives

Alternative	Description
No Action	Existing ferry service
C3(a) and C3(b)	120/200-foot high Bridge - Airport Area to Signal Road
C4	200-foot high Bridge - Airport Area to Cambria Drive Area
D1	120-foot High Bridge - Airport Area
F3	Pennock Island Crossing - 60-foot high Bridge & 210-foot high Bridge
G2*	Ferry Route from Peninsula Point
G3*	Ferry Route from Downtown Ketchikan
G4*	Ferry Route Adjacent to Existing Ferry

* Ferry alternatives retain the existing ferry service as part of the proposed alternative.

Figure 2 shows the location of the different access alternatives under consideration.

2.0 Ketchikan International Airport Effects

This chapter explores the direct and indirect effects that the Gravina Access Project alternatives would have on KIA property and its ability to deliver services to airport travelers, tenants, employees, and carriers.

2.1 Direct Effects

2.1.1 Existing Airport Facilities

This section discusses the direct impacts to airport facilities. Airport facilities include runways, taxiways, aprons, and related lighting, marking, and signing; passenger and cargo buildings and other terminal area buildings; general aviation buildings; firefighting and rescue buildings; aviation fuel and aircraft servicing facilities; and utilities including water, electricity telephone, drainage, and sewage.

The primary direct effect on the airport property is the need for of right-of-way for the roadway alignment between the terminal area and Tongass Narrows. Each of the alternatives has essentially the same proposed road network on airport property. The road layout has been specifically located to avoid taking any property currently in use for airport facilities. The roadway alignment, shown in Figure 3, is aligned between exiting short-term vehicle parking at the terminal and Tongass Narrows. From there, it continues south, passing between the general aviation tiedown apron and Tongass Narrows. At the south end of the runway, the road alignment would go be below the existing and future runway safety area. This alignment was selected to avoid any impact to the runway or current of future safety areas.

Bridges crossing in the vicinity of the airport touch down on airport property in different locations depending on their crossing heights, but each one comes down along the alignment of the proposed airport access circulation road. Neither the bridges, nor the piers for any of the bridges, would directly affect any existing airport buildings or facilities on land. Ferry crossing G4 would make landfall directly adjacent to the exiting ferry landing. An additional docking area would be constructed, but would not impact any airport facility. Bridge Alternative F3 and ferry Alternatives G3 and G2 all make landfall outside of the immediate operating area of the airport. They each have roughly the same airport access and circulation routing once on airport property as the other alternatives. Like the other alternatives, they do not affect any airport facilities directly.

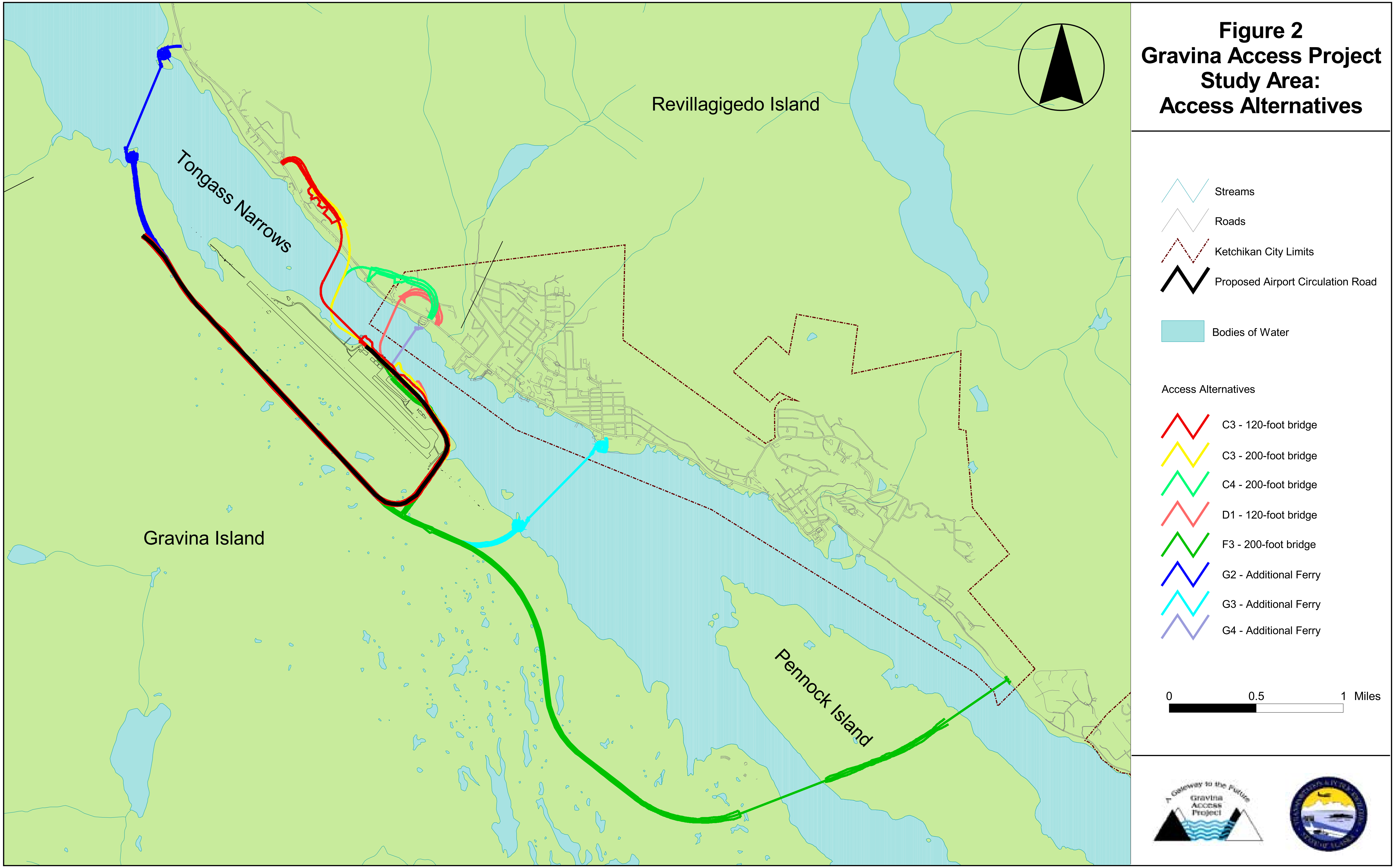
2.1.2 Airport Access, Circulation, and Parking

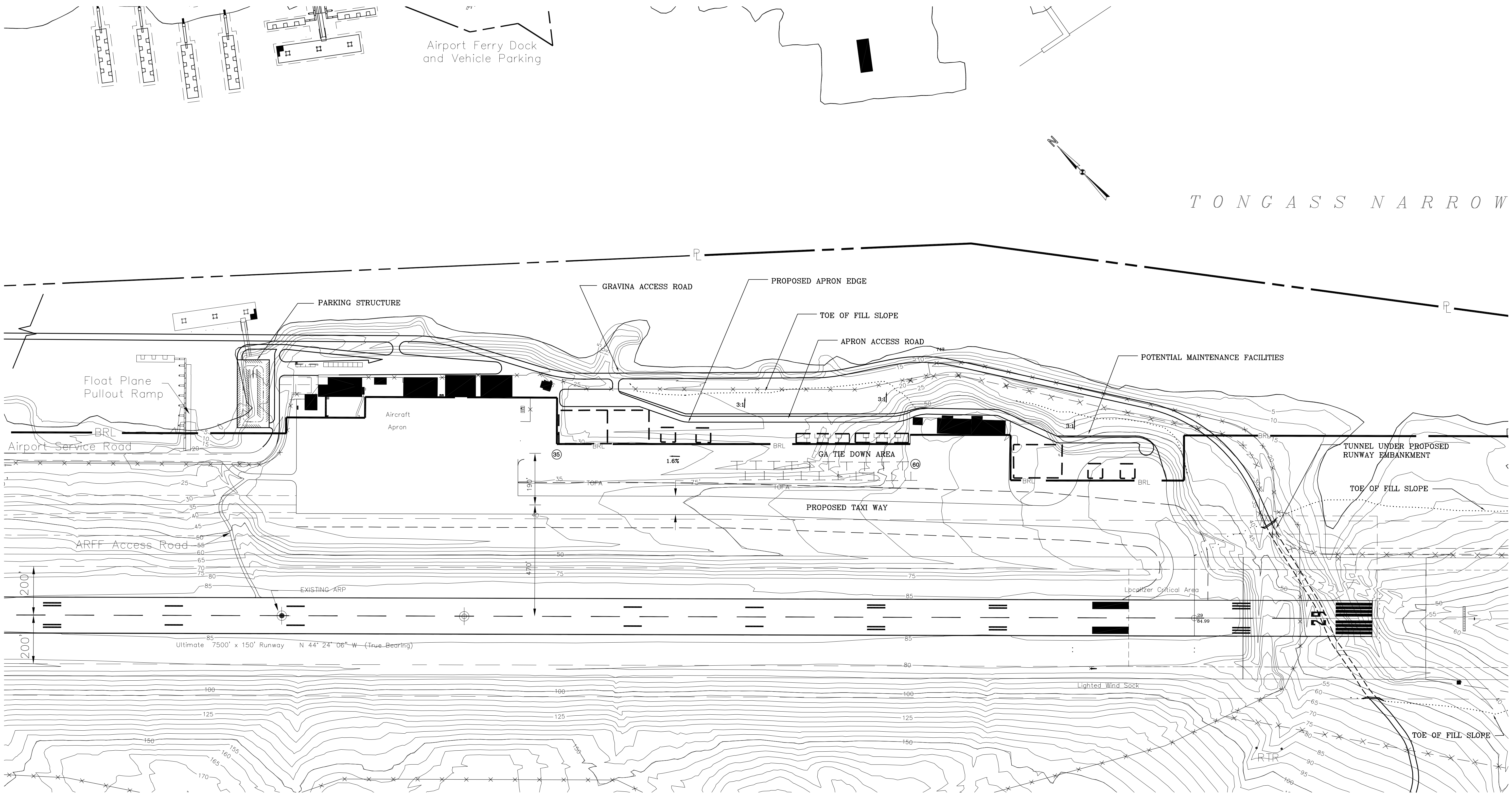
This section discusses the direct effects on existing airport access, circulation, and parking facilities. Each of the alternatives includes construction of additional access and circulation roadways to and around the airport on Gravina Island. As noted above, the proposed roadway construction within and immediately adjacent to existing airport property does not vary substantially among the alternatives and does not directly affect any airport facilities.

The existing parking and circulation system in the immediate vicinity of the terminal area would need to change to accommodate the improved access alternatives. The access and circulation of vehicles and pedestrian traffic would be modified in front of the existing terminal area to accommodate entrance and exit ramps to the bridge crossings in the vicinity of the airport (Alternatives C3(a), C3(b) C4, and D). The area would continue to have a space available short-term parking (subject to FAA's ultimate decision on security setbacks for vehicle parking from terminals) and a taxi\drop-off lane (see Figure 3).

The primary impacts to the airport terminal parking and circulation system are a result of the increased number of vehicles anticipated to drive to and park at the airport after access is improved. The resulting demand is not a direct effect, but rather is considered an indirect effect and is covered in Section 2.2.1. To accommodate increased parking demand, however, a parking structure would be required near the terminal area. Roadway and pedestrian circulation into and out of the parking structure would need to be accommodated. Pedestrian access to short-term parking, drop-off lanes, and long-term parking would be provided. Access and circulation in and around the airport terminal area would be accommodated in much the same way as it is currently provided. Other options for dealing with the secondary effects of improved access on parking and circulation are discussed in Chapter 3.

Figure 2
Gravina Access Project Study Area: Access Alternatives





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SCALE: 1 IN = 200 FT.
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STATE	PROJECT DESIGNATION
ALASKA	67698

HDR ALASKA, INC.

STATE OF ALASKA
DEPARTMENT OF TRANSPORATION
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POTENTIAL KETCHIKAN
AIRPORT DEVELOPMENT

DATE: 11/13/01 FIGURE 3

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2.1.3 Floatplane Facilities Impacts

This section presents the direct physical effects to the floatplane facilities at the airport. The alignments of bridge Alternatives C3(a), C3(b), and C4 cross over or are located very near the location of the floatplane base and transient floatplane dock at KIA. It is anticipated that these bridges would pass over the floatplane base with sufficient clearance to allow the continued operation of the base in the same location or only slightly realigned. Each of the bridges would be approximately 40 feet above the water at mean sea level where the bridge crosses over each of these features.

In each of Alternatives C3(a), C3(b) and C4, the piers, as currently designed, are located in the immediate vicinity of the floatplane base and near the transient floatplane dock. The location of the piers could hamper the ability of floatplane pilots to maneuver into and out of the floatplane base and could make some of the floatplane parking ramps or slips unusable.

In Alternatives C3(a) and C4, a pier is located approximately 100 feet from the westerly most point of the floatplane dock, just shoreward of the dock. This location is nearly centered along the primary water taxi lane into and out of the inland turning basin of the dock. There may still be room to maneuver floatplanes into and out of the basin, but the pier would be an impediment and would constitute a change to the existing situation. Another pier on each of these alignments is located on the shoreline directly adjacent to the ramp leading down to the transient floatplane dock. Due to the proximity with the transient floatplane ramp, the ramp and dock would likely need to be relocated, at least during construction, and could require permanent relocation or realignment.

Alternative D1 is aligned to the south of Alternatives C3(a)/(b) and C4, and would not directly affect the existing floatplane facilities. Alternative F3 crossing Pennock Island, is well south of any existing floatplane facilities and would have no direct affect.

Vehicle access to the transient dock, currently provided by a road and ramp, could be affected based on the ultimate location of a potential parking structure. One proposal to deal with this impact could be to relocate the transient float to another location. This would require a change in transient floatplane operations. Depending on its ultimate location, relocating the transient dock could impact pedestrian access and convenience in transferring from air taxi float plane operators to commercial, wheeled aircraft.

Another option might be keep the transient dock in place and provide access to it through the parking structure. As envisioned in Figure 3, the parking structure would be located on the road and ramp area currently used to access the transient float. Access to the ramp could likely be maintained from the bottom floor of the parking structure on a ramp of similar construction as currently exists. For pedestrians this could actually be a benefit because access to the main terminal would be largely covered by the parking structure and would likely be accommodated with an elevator to gain the height required to access the elevation where the terminal buildings are located.

None of the other floatplane facilities in Ketchikan would be directly affected by any of the alternatives.

2.1.4 Ketchikan International Airport Airspace

This section describes the direct effects of the various project alternatives on the airspace at KIA. Direct effects to airspace include the introduced penetrations into the airspace by the construction of the project alternatives. Change to operations, as a result of these penetrations are considered an indirect effect and are described in Section 2.2.2. Additional effects on airspace can be found in the technical memorandum entitled *Special Visual Flight Rules Analysis* (HDR 2001).

Federal Aviation Regulation (FAR) Part 77 establishes the standards for determining obstructions to air navigation and applies to existing and proposed manmade objects, objects of natural growth, and terrain. In particular, the standards apply to a planned facility or use proposing construction or alteration of more than 200 feet in height above the ground level at the airport site that is a public use airport. This is the case with several of the bridge alternatives under consideration. The KIA Master Plan describes the FAR Part 77 airspace in effect at KIA as follows:

> **Primary Surface.** The primary surface is a surface longitudinally centered on a runway. A runway with a hard surface has a primary surface extending 200 feet beyond each end of the runway. The width of the primary surface ranges from 250 feet to 1,000 feet depending on the existing or planned approach (visual, non-precision, or precision). At KIA, the primary surface for Runway 11/29 extends 200 feet beyond each runway end and is 1,000 feet wide. According to the Airport's most recent FAR Part 77 Airspace Drawing, completed in 1997, there are several obstructions, mostly trees and ground, located in the primary surface.
>
> **Transitional Surface.** The transitional surface extends outward and upward at right angles to the runway centerline at a slope of 7 feet horizontally for each foot vertically (7:1) from the sides of the primary and approach surfaces. The transitional surfaces extend to where they intercept the horizontal surfaces at a height of 150 feet above the runway elevation. According to the Airport's most recent FAR Part 77 Airspace Drawing, completed in 1997, there are several obstructions, mostly trees and ground, located in the transitional surface.
>
> **Horizontal Surface.** The horizontal surface is a horizontal plane located 150 feet above the established airport elevation, covering an area from the transitional surface to the conical surface. The perimeter is constructed by swinging arcs from the center of each end of the primary surface and connecting the adjacent arcs by lines tangent to those arcs. The radius of the arcs is 10,000 feet for all runway ends designated for

approaches that serve larger than utility type aircraft. According to the Airport's most recent FAR Part 77 Airspace Drawing, completed in 1997, there are several obstructions, mostly trees and ground, located in the horizontal surface.

Conical Surface. The conical surface extends outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet. According to the Airport's most recent FAR Part 77 Airspace Drawing, completed in 1997, there are several obstructions, mostly trees and ground, located in the conical surface.

Approach Surface. The approach surface is longitudinally centered on the extended runway centerline and extends outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based on the type of approach available or planned for that runway end. At KIA, the approach slope for Runway 11 is 50:1, and for Runway 29 the approach slope is 34:1.

The inner edge of the approach surface for Runway 29 is the same width as the primary surface (1,000 feet) and it expands uniformly in width for 3,500 feet to an outer width of 4,000 feet with an approach slope of 34:1. The approach surface for Runway 11extends for a horizontal distance of 10,000 feet at 50:1 and then an additional 40,000 feet at 40:1, to an outer width of 16,000 feet. In order to allow for the heights of vehicles on roadways, the approach surface must clear rail lines by 23 feet, interstate highways by 17 feet, and all other roads by 15 feet.

According to the Airport's most recent Airport Obstruction chart, published by the National Oceanic and Atmospheric Administration (NOAA) and based on field surveys conducted in 1984, there are several obstructions located in the various runway approach surfaces. Several trees penetrate the 50:1 approach surface for Runway 11. One tree, the ILS Localizer/DME, and a radio beacon antenna penetrate the 34:1 approach surface for Runway 29. The NAVAIDs that penetrate the 34:1 approach surface for Runway 29 are fixed by function and are frangibly mounted; thus, they are permitted by the FAA to penetrate the approach surface.

Figure 4 shows the FAR Part 77 surfaces relevant to KIA.

Bridges C3(a) and C4 each penetrate the transitional surface of the airport. Figures 5 and 6 show the direct impacts into the airspace with cross section elevation drawings. The drawings depict the airport's imaginary surfaces and the amount and location where the alternatives would penetrate the surface cross-hatched. FAA is currently preparing an airspace determination to evaluate the implications (secondary effects), if any, of these penetrations. See more on the indirect effects of the penetrations in Section 2.2.1.

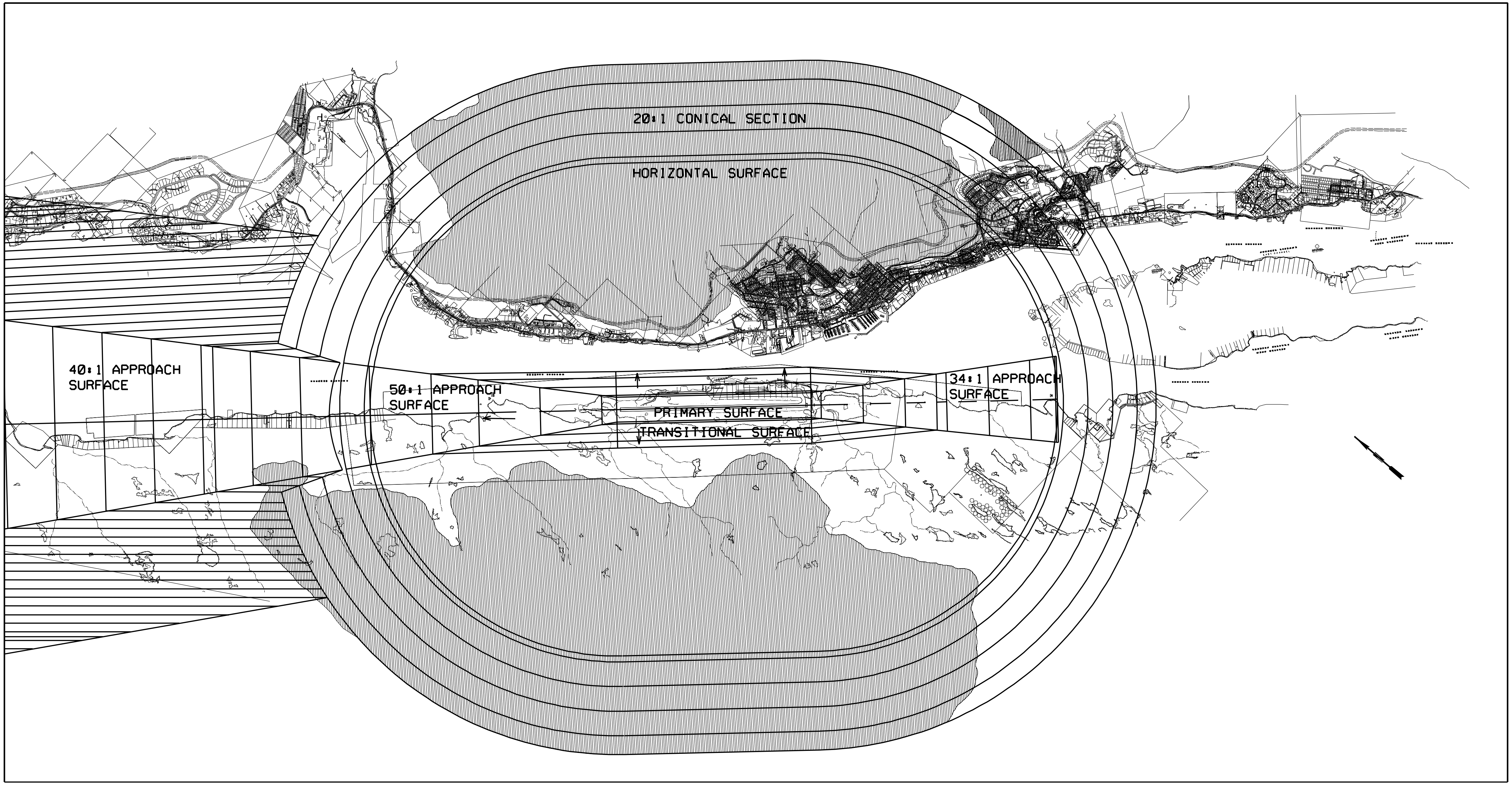
2.1.5 Construction Impacts

Airport users and transportation providers would be affected by the project alternatives during construction of the crossing alternatives. Alternatives C3(a), C3(b), C4 would each require relocation or temporary closures of floatplane facilities during construction. In addition, these alternatives and Alternative D1 would also directly affect the existing airport ferry terminal and access ramp (pedestrian and vehicular) to the airport during construction, and temporary relocation of the ferry terminal and approach ramp would be required to allow continued operation of the ferry during construction. Ultimately, ferry service would be discontinued under the bridge scenarios. Alternative F3, which crosses Tongass Narrows south of the airport at Pennock Island, would not have a direct effect on the airport during construction. Each of the alternatives includes essentially the same circulation roadway within and out of the airport terminal area. Construction of this roadway would require staging and transporting material and labor through the airport area. Passengers and transportation service providers could experience delays and congestion in the terminal parking and dropoff area during construction.

2.2 Indirect Effects

2.2.1 Airport Access, Circulation, and Parking

All alternatives would have implications for vehicle circulation patterns at the airport. The bridge alternatives in particular are anticipated to result in greater vehicular access to KIA from Ketchikan, as well as greater access to developable lands on Gravina Island (Northern Economics, 2001). Table 2 shows projections for trips to Gravina Island, including those to the KIA. To determine the airport-related trips, the methodology employed by USKH (under contract to DOT&PF) for the KIA Master Plan was adopted for the traffic forecasts in this memo. The USKH-projected growth rates for air travel were reviewed and considered acceptable for a long-term forecast. However, there have been significant changes in Ketchikan’s economy since the USKH forecast was completed. To account for these changes, growth rates from the KIA Master Plan are applied to a starting year of 2000 rather than 1997 as used in the Master Plan. This revised approach has the effect of reducing near-term traffic projections to better reflect current conditions.



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STATE	PROJECT DESIGNATION
ALASKA	676981

HDR ALASKA, INC

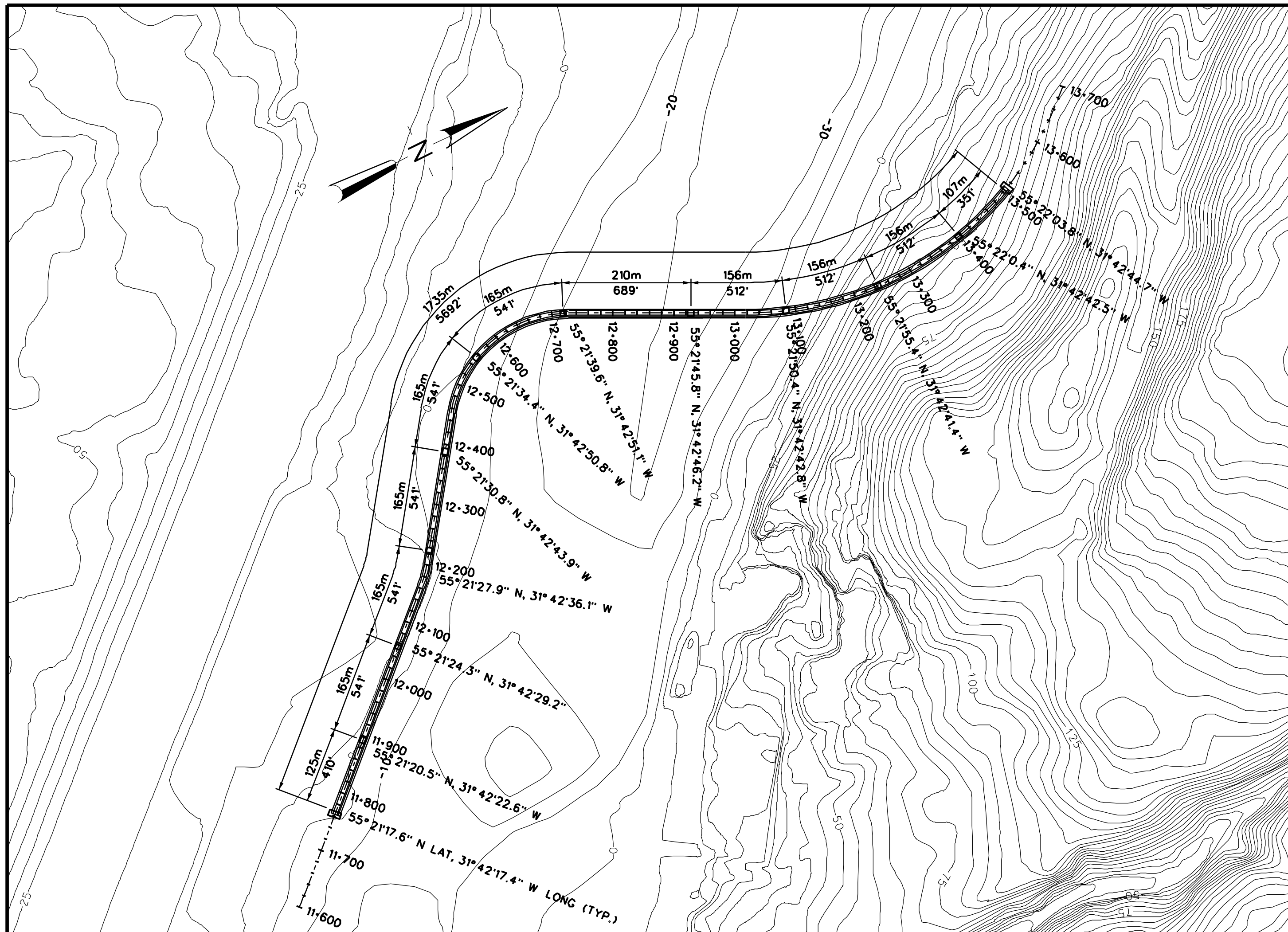
STATE OF ALASKA
DEPARTMENT OF TRANSPORATION
AND
PUBLIC FACILITIES

GRAVINA ACCESS PROJECT

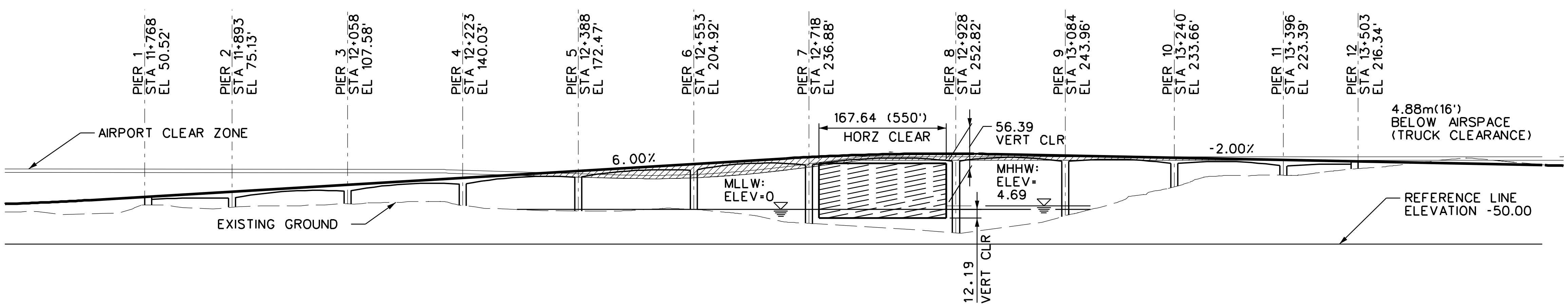
PART 77 AIRSPACE
ENCROACHMENTS

DATE: 11/01

FIGURE 4



PLAN



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	N_MLLW	0.00
	S_MLLW	0.00
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VERTICAL DATUM: MLLW

NOTE: PIER ELEVATIONS
ARE FROM MSL = ELEV 0.0'

ELEVATION

STATE	PROJECT DESIGNATION
ALASKA	676981

STATE OF ALASKA
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GRAVINA
ACCESS PROJECT
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PART 77 ENCROACHMENTS

DATE: 11-01 | FIGURE: 5

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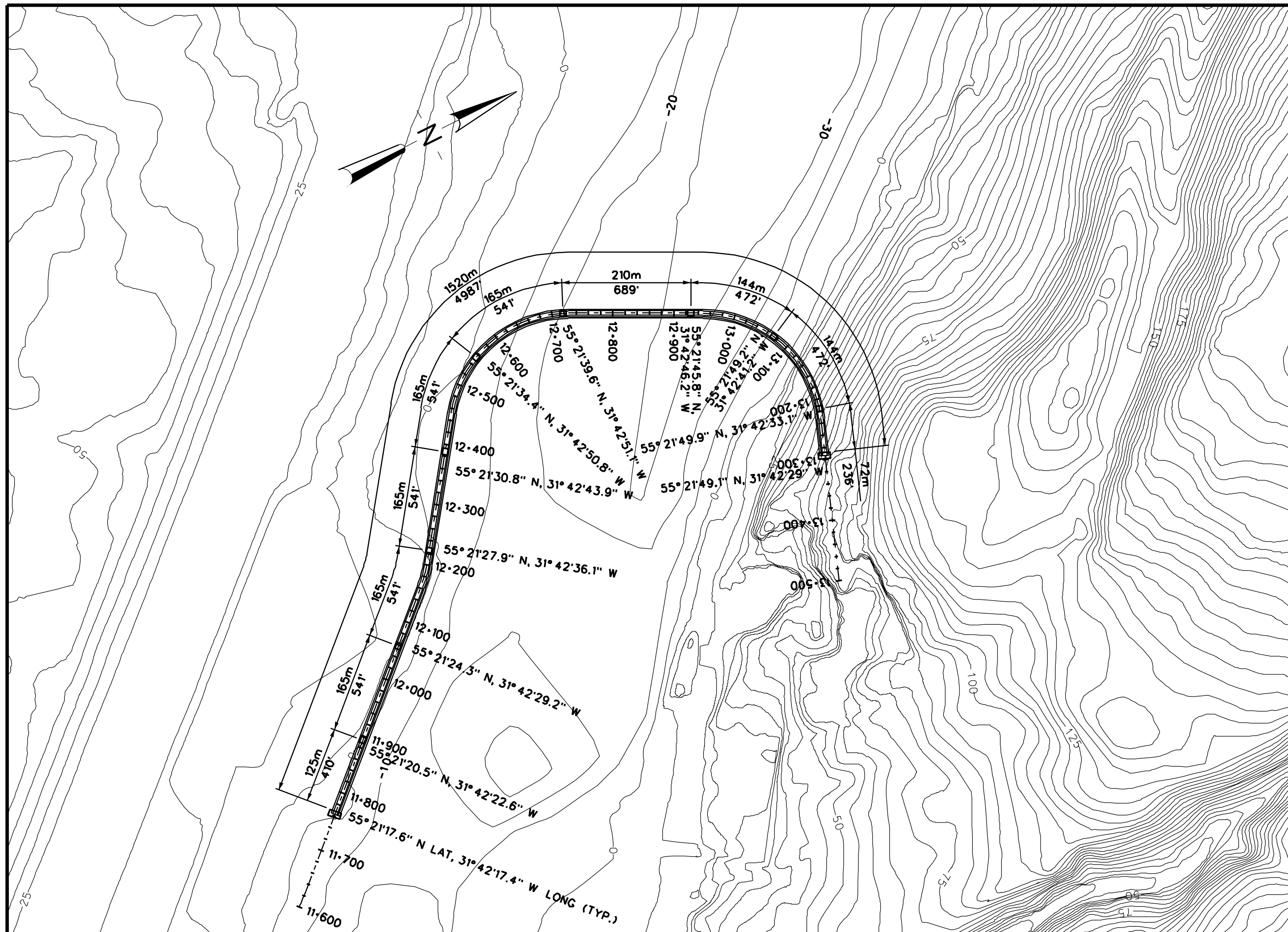

PLAN

LINE	SURFACE	OFFSET
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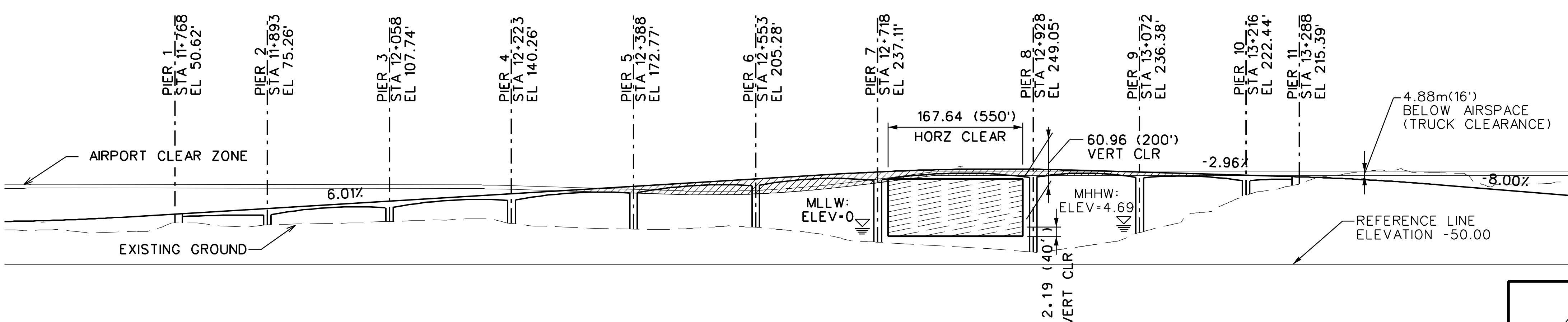
VERTICAL DATUM: MLLW



NOTE: PIER ELEVATIONS
ARE FROM MSL = ELEV 0.0'

ELEVATION

STATE	PROJECT DESIGNATION
ALASKA	676981

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GRAVINA
ACCESS PROJECT
ALTERNATIVE
C4(a)-200
PART 77 ENCROACHMENT

DATE: 11/01 | FIGURE: 6

Table 2. Traffic Projections, by Trip Source

Access Alternative	Source of Trips	Number of Person Trips, by Overall Economic Activity: Low	Medium	High
Bridge (except F3)				
	Air travel	1,470	1,540	1,580
	Adjustments for Ferry Travel	240	260	275
	Airport Business	1,000	1,060	1,125
	Other Business	240	400	410
	Gravina Residences	280	300	315
	Recreation and Community	70	80	90
	Total	**3,300**	**3,600**	**3,800**
Bridge Across Pennock Island (F3)*				
	Total	**3,400**	**4,000**	**4,300**
Improved Ferry				
	Air travel	1,075	1,140	1,160
	Adjustments for Ferry Travel	(15)	260	275
	Airport Business	200	215	230
	Other Business	30	175	180
	Gravina Residences	50	85	90
	Recreation and Community	50	60	75
	Total	**1,400**	**1,900**	**2,000**
No Action				
	Air travel	1,075	1,140	1,200
	Adjustments for Ferry Travel	(15)	(15)	(15)
	Airport Business	150	220	240
	Other Business	25	30	35
	Gravina Residences	35	40	40
	Recreation and Community	30	50	70
	Total	**1,300**	**1,500**	**1,600**

The total number of trips in each category have been rounded. Airport business includes general aviation and businesses related to or located at the airport. Other business includes non-airport related business and general retail on Gravina Island. Recreation includes trips for tourism.

** The additional trips associated with Alternative F3 are attributable to residential development on Pennock Island. All other sources are identical to the other bridge alternatives.*

The next step in the analysis was to determine the resulting effects that the increased vehicle access would have on the parking and circulation system at KIA. Table 3 shows the vehicle parking requirement as identified by the KIA Master Plan.

Table 3. Forecast Parking Demand – Ferry vs. Bridge Access

Year	With Ferry	With Bridge Access
1998	84	129
2003	119	139
2008	124	146
2018	134	158

Source: DOT&PF Draft KIA Master Plan, 2000

The following is a summary of the assumptions for parking demand presented in the KIA Master Plan.

- Ferry access limits the number of vehicles coming to the airport.
- Current road system users include airport employees, airport tenants, freight delivery, passenger pickup and drop off, buses, rental cars, and taxis.
- The airport road system is sufficient for the 20-year planning horizon.
- The road system will need to be upgraded and expanded to handle increased traffic volume and to ensure circulation if a bridge access is developed between Ketchikan and the airport.
- The current ferry capacity estimate for vehicle parking is 29,760 vehicles during the peak month and 248,200 vehicles annually.
- The 20-year forecast demand for vehicles is 13,761 during the peak month and 114,673 annually.

The bridge estimates for vehicle parking as identified in the KIA Master Plan were then compared with an independent assessment of parking demand based on established methodology presented in FAA Advisory Circular (AC) 150/5360-9 *Planning and Design of Airport Terminal Facilities at Non-hub Locations.* The methodology presented in FAA AC 150/5360-9 recommends estimating vehicle space demand by using the forecast of total annual enplaned passengers.

Table 4. Vehicle Parking Demand with a Bridge

Year	Total Annual Enplaned Passengers	Vehicle Parking Spaces[1]
1998	114,799	200
2003	122,813	215
2008	128,526	230
2018	138,920	240
2025	165,303[2]	280

1. Based on FAA AC 150/5360-9

2. Extrapolated from 20-year air traffic forecast presented in the Draft Ketchikan International Airport Master Plan, 2000.

As shown in Table 4, the forecast volume of enplaned passengers for the year 2018 translates into a future demand of approximately 240 total (public and private) vehicle parking spaces. In other words, relying on the FAA methodology in AC 150/5360-9, the estimated vehicle parking space for 2018 would require an increase of 82 additional vehicle parking spaces over the estimate presented in the KIA Master Plan with the development of a bridge between the airport and Ketchikan.

The revised parking forecast demand was compared to the existing capacity for parking on both Gravina and Revillagigedo. Currently, parking at the airport is limited and generally for airport tenant uses and passengers only. The supply is split between Gravina and Revillagigedo as indicated in Table 5. There are 97 spaces currently accommodated at KIA on Gravina and 163 spaces provided on Revillagigedo, for a total of 260 spaces available.

Table 5. Existing Parking Capacity (spaces)

Ketchikan Int'l Airport (Gravina)		**Ferry Terminal (Revillagigedo)**	
Public Spaces at Terminal	62	Two-day auto	107
Rental Car	17	Two-day bus	4
Transient Floatplane Dock	18	Two week auto	52
Total Space	97	Total Spaces	163

Source: Draft Ketchikan International Airport Master Plan, 2000.

The KIA Master Plan concluded that there was sufficient parking capacity (260 spaces) to satisfy demand (134 spaces), given continued use of the existing ferry access in 2018. The KIA Master Plan also concluded that if a bridge were constructed, there would be insufficient capacity (97 spaces on Gravina) to accommodate the demand (158 spaces) in 2018 and recommended that a parking structure be built to accommodate the excess demand, should a bridge ever be constructed.

Based on HDR's revised parking estimate, parking areas at KIA will need to accommodate 240 vehicles in 2018 and 280 vehicles in 2025. Under the ferry alternatives (G2, G3, and G4), the total number of spaces will be sufficient to cover the airport master planning period (2018), but are forecast to be insufficient by approximately 20 spaces by the end of the Gravina Access Project timeframe (2025). Under each of Alternatives G2, G3, and G4, parking areas would be sized and designed to accommodate demand for access to KIA in addition to the other demand sectors for Gravina Island travel.

With bridge access, it is expected that all demand for airport parking would shift from Revillagigedo Island to the airport. Such access would have a profound effect on the parking requirements at KIA. The 97 spaces currently available at the airport would be insufficient to accommodate the increase in demand. Additional parking areas would be required. To accommodate the demand, a 300-space, three-floor parking structure has been suggested to be constructed as part of any bridge alternative. A proposed location of the structure would be northeast of the terminal and apron area. Such a structure would accommodate all of the forecast demand and would leave additional space in front of the terminals for drop off lanes, taxi operations, and additional short-term parking for meeters and greeters (pending FAA security requirements following September 11). Shifting the parking to KIA on Gravina would also free up waterfront land on Tongass Narrows currently used for ferry parking. Options for accommodating the increased parking demand and resulting vehicle and pedestrian circulation needs to maintain efficient airport operations are detailed in Chapter 3.0.

2.2.2 Ketchikan International Airport Operations

This section describes the indirect effects of the various project alternatives on the operations and airspace at KIA. Discussions with Alaska Airlines, airport management, DOT&PF, and FAA have not identified substantial operational effects to approach or departure procedures or general operating conditions at KIA. Fixed-wheeled aircraft, such as those operated by Alaska Airlines and others, have less potential to be affected by a bridge alternative than floatplane operations. These aircraft follow recommended flight patterns over the eastern shore of Gravina Island and operate from KIA. Under the recommended VFR arrival and departure patterns, aircraft are to maintain the runway heading until they have reached an altitude of 900 feet or greater, weather permitting. For pilots operating under special VFR minimums, this altitude would be reduced. Pilots operating under special IFR authorization will not initiate an arrival for KIA if ceiling conditions fall bellow 500 feet. None of the bridge alternatives would pose an obvious flight hazard to wheeled aircraft following these published procedures and operating at KIA.

The primary direct effect that the project alternatives will have on Ketchikan International, with potential to affect operations, is to airspace. As identified in Section 2.2.1, bridge structures on a number of the alternatives would penetrate the FAR Part 77 airspace surface and such penetrations could have an indirect operational effect. FAA's final airspace determination is not yet complete so it is difficult at this time to be conclusive as to what the impacts are.

The best information available, at this time, is based on airspace determinations that FAA conducted on the preliminary list of alternatives in September of 2000. At that time, the FAA evaluated all of the bridge options for their effect on navigational airspace. Only two alternatives (C1 and C2) were found to be objectionable. Both of these preliminary bridge alternatives (C1 and C2) crossed in the vicinity of the current crossing locations (revised after the initial FAA airspace determination) near the airport. Option C1 was a high-level bridge that would connect to Tongass Avenue north of the existing ferry slip, rise along the hillside behind the quarry, turn westward to cross over Tongass Avenue and Tongass Narrows, and then turn northward to parallel the airport runway as it descended. It would have provided a vertical navigational clearance of 64 m (210 ft) and would have penetrated the horizontal surface of KIA by approximately 13 m (42 ft) and the transitional surface by approximately 29 m (95 ft), assuming a vehicle height of 4.6 m (15 ft). Option C2 was a high-level bridge that would have started at Tongass Avenue south of the airport ferry terminal and rise northward along the hillside behind the quarry.

It would then turn westward to cross Tongass Avenue and Tongass Narrows, and then turn southward to parallel the runway. Option C2 would have provided a vertical navigational clearance of 64 m (210 ft). The bridge would have penetrated the horizontal surface of KIA by approximately 14 m (46 ft) and the transitional surface by approximately 25 m (82 ft), assuming a vehicle height of 4.6 m (15 ft).

Many of the alternatives originally reviewed by FAA have subsequently been eliminated as unreasonable and others have been modified in terms of height and alignment. For instance, the current alternatives under study have been lowered slightly to reduce the penetration into the airspace and their alignments modified such that all alignments go to the south once they reach Gravina. Both of these refinements should have a positive effect on airspace at KIA. The FAA is conducting another airspace determination on the current alternatives. It is anticipated that the FAA will recognize the improvements over the previous alternatives to the KIA airspace based on the engineering refinements and is not expected to identify substantial new concerns beyond those already raised. Should the FAA continue, however, to find the bridge alternatives "objectionable," it is important to note that such airspace effects can be mitigated. According to the FAA, "objectionable determinations can be mitigated through marking and lighting, if the public comment process indicates that the users and community desire such. However, it should be noted that lower approach minimums would/could be lost due to the obstruction" (Schommer 2000).

HDR staff met with Alaska Airline's chief pilot, Terry Smith, to discuss the Gravina Island Access project. Terry indicated that the alternatives would not interfere with Alaska Airlines precision approach and departure procedures, including Alaska Airline's special IFR procedures. Terry said the altitude of the descending glide path exceeds that of the elevations proposed. He also said that on a missed approach, the climb gradient exceeds the elevation of the proposed bridge configurations. Terry indicated that Alaska Airlines will be changing its fleet mix in the future to include aircraft with better climbing performance and that he did not anticipate any future interference with Alaska Airlines as a result of any of the alternatives.

2.2.3 Tongass Narrows Floatplane Operations

While floatplanes operate at numerous locations along Tongass Narrows, there are four landing areas (waterways) published by FAA (Figure 7). The four floatplane landing and takeoff areas are adjacent to the primary floatplane bases and main locations for operations. None of these floatplane landing and takeoff areas are marked with buoys or lights. Takeoff and landing patterns are not regulated, but patterns are suggested, and pilots generally try to follow the recommendations. Takeoff and landing directions depend upon the prevailing wind, but the majority of operations throughout the year occur to the east.

Three of the floatplane landing and takeoff areas are identified by the Alaska Supplement: (1) a 9,000-foot by 2,000-foot waterway, serving ***Murphy's Pullout and Peninsula Point,*** runs northeast to southwest near the mouth of Ward Cove; (2) a 9,500-foot by 1,500-foot waterway serving the floatplane base and transient dock at ***KIA*** runs

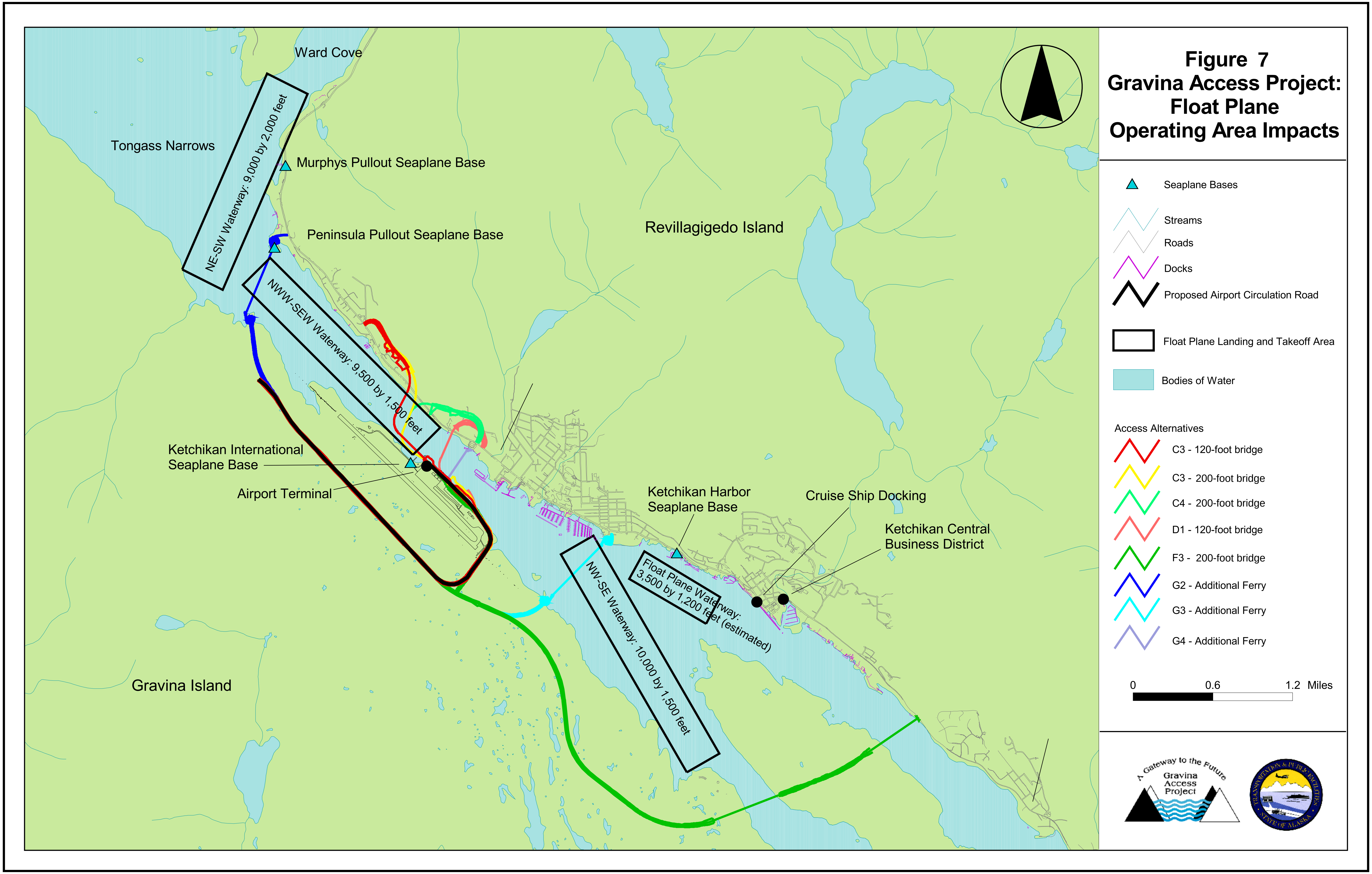


Figure 7
Gravina Access Project:
Float Plane
Operating Area Impacts
Ward Cove
Tongass Narrows
NE-SW Waterway: 9,000 by 2,000 feet
Murphys Pullout Seaplane Base
Peninsula Pullout Seaplane Base
Revillagigedo Island
NWW-SEW Waterway: 9,500 by 1,500 feet
Ketchikan International
Seaplane Base
Airport Terminal
Ketchikan Harbor
Seaplane Base
Cruise Ship Docking
Ketchikan Central
Business District
Float Plane Waterway:
3,500 by 1,200 feet (estimated)
NW-SE Waterway: 10,000 by 1,500 feet
Gravina Island
Seaplane Bases
Streams
Roads
Docks
Proposed Airport Circulation Road
Float Plane Landing and Takeoff Area
Bodies of Water
Access Alternatives
C3 - 120-foot bridge
C3 - 200-foot bridge
C4 - 200-foot bridge
D1 - 120-foot bridge
F3 - 200-foot bridge
G2 - Additional Ferry
G3 - Additional Ferry
G4 - Additional Ferry
0
0.6
1.2 Miles
A Gateway to the Future
Gravina
Access
Project

parallel to Runway 11/29 and is located approximately 1,500 feet from the runway centerline (this area is also identified in the Tongass Narrows Voluntary Waterway User Guide); (3) a 10,000-foot by 1,500-foot waterway runs northwest by southeast across Tongass Narrows serving the ***Ketchikan Harbor seaplane floats***. Another floatplane landing area (4) approximately 3,500-feet long by 1,200-feet is identified only in the Tongass Narrows Voluntary Waterway User Guide parallel to ***cruise ship docks*** in front of the Ketchikan Harbor seaplane floats. Operational impacts associated with each of these operating areas are described below.

(1) Murphy's Pullout and Peninsula Point Floatplane Landing And Takeoff Area.

None of the alternatives cross this floatplane landing and takeoff area and none would affect use or operations at this published operating area.

(2) KIA Floatplane Landing And Takeoff Area.

Ferry option G2. Ferry option G2 crosses the KIA Floatplane Landing And Takeoff Area at its northwest end and the existing ferry crosses near its southeast end. ***Ferry option G4*** crosses in the same location as the existing ferry at the southeast end of the takeoff and landing area. Floatplane traffic would have to contend with additional ferry traffic traversing perpendicular to operations at the northwest end. Ferry traffic at the southeast end continues the same as the "no action alternative."

Bridge Alternatives C3(a), C3(b), C4. Each of the bridge Alternatives C3(a), C3(b), C4 cross the KIA Floatplane Landing And Takeoff Area in the southeast third of the operating area. If the designation of the floatplane landing and takeoff area were shifted 1,700 feet along Tongass Narrows to the northwest, none of the alternatives would cross the published portion of the floatplane landing and takeoff area. ***Alternative D1*** crosses to the southeast of the floatplane landing and takeoff area outside of the published operating area.

Seaplane landings to the southeast may need sufficient horizontal distance from the bridge crossing such that in the event that a pilot must abort a landing and initiate a go-around there would be sufficient distance to climb over the bridge. Such procedures could require shifting the floatplane landing and takeoff area further to the northwest. Alternately, the go-around procedures could specify a turn, taking the aircraft over the airport to the south or over town to the north. Takeoffs to the southeast would need to have sufficient space to clear the bridge or provide for a planned turn north or south around the bridge. Alternately, if planes are departing from KIA, they could taxi under the bridge before beginning the takeoff to the southeast. Such a departure would require extending a floatplane landing and takeoff area to the southeast starting at the bridge.

When landing to the northwest, floatplanes are required only to have enough altitude to clear the bridge. Shifting the runway 1,700 feet to the northwest, should allow floatplanes to clear the bridge and have 9,000 feet of floatplane landing and takeoff area to complete the landing. It should be noted that FAA planning criteria presented in AC 150/5395-1 “Seaplane Bases” recommend the floatplane landing and takeoff area be 2,500 feet in length. Taking off to the northwest from KIA would operate much like a displaced threshold. In other words, while it may not be counted as part of the full landing distance required, this area on either side of the bridge could still be used during takeoffs.

Such a situation, with a bridge crossing or bisecting a seaplane floatplane landing and takeoff area, is not unknown in Southeast Alaska. In Sitka, the seaplane floatplane landing and takeoff area parallels Sitka Channel and the bridge to Japonski Island crosses the floatplane landing and takeoff area. The bridge to Japonski Island is a cable-stay structure 70 feet at the deck with the 160 feet tall towers. Pilots taking off to the southeast taxi 1,600 feet to pass under the bridge before beginning the operation.

To maintain floatplane operations at the airport, the floatplane facilities may be relocated. One potential concern of the floatplane pilots is the length of taxi time that would be required from the base to the takeoff and landing area. Generally, floatplane pilots prefer to minimize taxi length and time.

Bridge Alternative F3. If taking off to the southeast from the KIA Floatplane Landing And Takeoff Area, the bridges associated with Alternative F3 cross the east and west channels along Pennock Island. A low bridge (60 feet high) was proposed for the East Channel, as that is the preferred arrival and departure route for floatplanes into and out of the Ketchikan area to the southeast. The F3 alignment should be far enough away from the KIA takeoff and landing area for planes to climb over the bridge on the East Channel.

(3) Ketchikan Harbor Seaplane Floats Floatplane Landing and Takeoff Area.

Ferry Option G3. The ferry option G3 would cross this takeoff and landing area at its most northern end. Floatplane traffic would have to contend with additional ferry traffic traversing perpendicular to operations at this location. None of the other alternatives crosses the takeoff and landing area. The landing area is aligned northwest by southwest. Planes making approaches and departures off of this takeoff and landing area should not have problems with any of the bridge alternatives being aligned in the way of an aborted landing.

(4) Cruise Ship Docks Floatplane Landing and Takeoff Area.

The takeoff and landing area is generally aligned parallel to Tongass Narrows. None of the alternatives crosses the operating area. Taking off to the northwest, pilots would need to gain sufficient altitude prior to the bridge crossing. Alternative D1 crosses approximately 1.5 miles, and Alternatives C3 and C4 cross approximately 2 miles, northwest of the end of the floatplane takeoff and landing area.

2.3 Planned Airport Facilities

The DOT&PF is currently revising the KIA Master Plan. The master plan update considers how the airport will need to develop to accommodate future growth and changes in operations over a 20-year time period (through 2018). Key components of the master plan update most pertinent to the Gravina Access Project include: parking additions, circulation modifications, and terminal, apron and taxiway expansion and improvements (see Figure 8). The two key projects in the plan call for completion of a parallel taxiway along the north side of Runway 11 and an upgrade of the Runway Safety Area (RSA) to be accomplished by shifting the runway 800 feet. This shift will create 1,000 feet of safety area at the northwest end without requiring significant in-water fill. The project would also build 1,000 feet of RSA beyond the shifted runway at the southeast end.

2.3.1 Direct Effects

In large part in deference to the taxiway extension project, and the resulting fill in Tongass Narrows that a road would cause if extended to the waterside of the taxiway, all alternatives with approaches that went north around the airport have been dropped or revised to go around the south end of the runway. Moreover, roadway circulation routes around the south end of the runway provide better overall access to developable airport property. As a result of these modifications, there would be no impact to the planned taxiway extension project.

As a result of all current airport circulation alternatives traversing around the airport to the south, conflicts could occur with the runway and or runway safety area. As mentioned above, the DOT&PF plans to shift the runway 800 feet to the south and add an additional 1,000 feet of runway safety area the end (a total of 1,800 feet). There are two alternatives to avoiding impacts to the runway operating conditions: (1) traverse around the shifted runway and safety area, and (2) tunnel under the extension.

At this point, the project team is recommending that the road traverse to the south of the existing runway safety area but within the areas of the future runway shift. This would bring the road through the current runway protection zone but outside the current runway safety area. The road would be approximately 45 feet below the existing runway surface (extended), well below the approach surface to Runway 29. Such an alignment would have no impact on current operations and would avoid impacts to Government Creek. The planned runway shift would occur over the top of the roadway, at which time the roadway would be placed in a cut and cover tunnel. If the runway shift and safety area project is completed prior to the Gravina Access Project, the Gravina Access Project would be responsible for the tunnel work. If the Gravina Access Project occurred first, then the tunnel would be accomplished at a later date as part of the runway shift and safety area project. The proposed circulation roadway is not currently shown on the

AIRPORT DATA		EXISTING	ULTIMATE
AIRPORT TYPE		Primary	Primary
AIRPORT REFERENCE CODE		C-III	C-III
AIRPORT ELEVATION		88' MSL	88' MSL
MEAN MAXIMUM TEMPERATURE OF HOTTEST MONTH		64° F	64° F
AIRPORT REFERENCE POINT (ARP) COORDINATES - NAD '83	Latitude	N 55° 21' 19.95"	N 55° 21' 14.52"
	Longitude	W 131° 42' 49.46"	W 131° 42' 40.64"
AIRPORT and TERMINAL NAVIGATIONAL AIDS		DME NDB ILS/GPS	DME NDB ILS/GPS
NAVIGATIONAL AIDS (RUNWAY 11)		NDB, DME ILS-Cat I MALSR VASI-4	NDB, DME ILS-Cat I MALSR VASI-4
NAVIGATIONAL AIDS (RUNWAY 29)		NDB, DME GPS MALSR VASI-4	NDB, DME GPS MALSR VASI-4

RUNWAY DATA	RUNWAY 11-29 EXISTING	RUNWAY 11-29 ULTIMATE
AIRPORT REFERENCE CODE (APPROACH CAT.-DESIGN GR.)	C-III	C-III
RUNWAY DIMENSIONS	7500' x 150'	7500' x 150'
RUNWAY BEARING	N 44° 24' 06" W	N 44° 24' 06" W
RUNWAY INSTRUMENTATION	Precision	Precision
RUNWAY SAFETY AREA	7900' x 300'	9500' x 500'
RUNWAY OBSTACLE FREE ZONE	7900' x 400'	7900' x 400'
RUNWAY OBJECT FREE AREA DIMENSIONS	9500' X 550'	9500' X 720'
RUNWAY PERCENTAGE WIND COVERAGE	98.4%	98.4%
RUNWAY APPROACH SURFACES 11 & 29, RESPECTIVELY	50:1, 34:1	50:1, 34;1
APPROACH VISIBILITY MINIMUMS 11 & 29, RESPECTIVELY	3/4 MILE, 1 MILE	3/4 MILE, 1 MILE
RUNWAY LIGHTING	HIRL	HIRL
RUNWAY MARKING	Precision	Precision
TAXIWAY LIGHTING	MITL	MITL
TAXIWAY MARKING	Centerline	Centerline
TAXIWAY A SAFETY AREA WIDTH	118'	118'
TAXIWAY B SAFETY AREA WIDTH	79'	79'
TAXIWAY A OBJECT FREE AREA WIDTH	186'	186'
TAXIWAY B OBJECT FREE AREA WIDTH	131'	131'
EFFECTIVE RUNWAY GRADIENT (in %)	0.1442	0.1442
PAVEMENT MATERIAL	Asphalt (Grooved)	Asphalt (Grooved)
PAVEMENT STRENGTH (in thousand lbs.)[1]	75(S),200(D),300(DT)	75(S),200(D),300(DT)

[1] Pavement strengths are expressed in single (S), dual (D), dual tandem (DT), and/or double dual tandem (DDT) wheel loading capacities.

BUILDINGS/FACILITIES

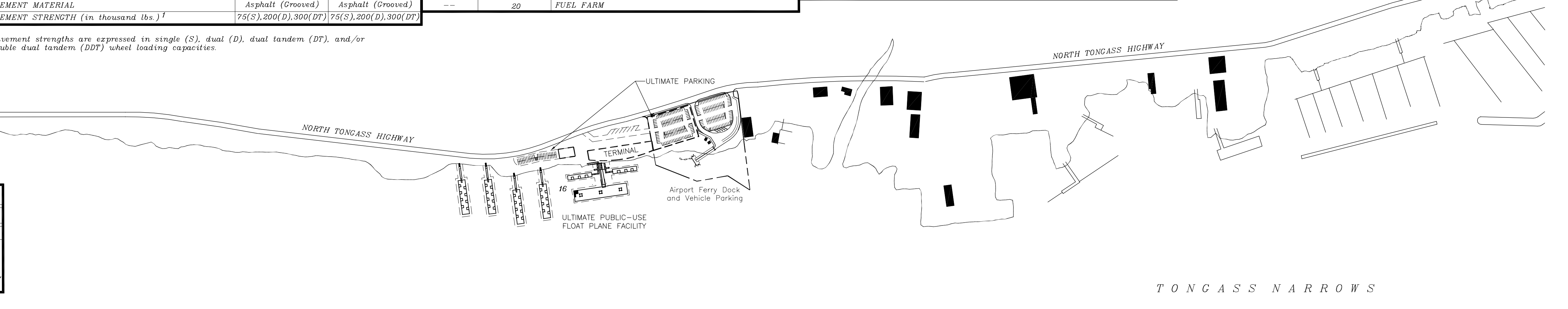
EXISTING	ULTIMATE	DESCRIPTION
1	1	TERMINAL BUILDING
2	2	FISH COOLER
3	3	AIRPORT RESCUE & FIREFIGHTING(ARFF)& EQUIP. BLDG
4	4	TAQUAN AIR
5	5	TAQUAN AIR
6	6	TAQUAN AIR
7	7	ALASKA AIRLINES EQUIPMENT BUILDING
8	8	REGULATOR BUILDING
9	--	UNDERGROUND FUEL TANKS (TO BE REMOVED)
10	--	STORAGE BUILDING (TO BE REMOVED)
--	11	EXECUTIVE HANGARS
12	12	AUTOMATED SURFACE OBSERVATION SYSTEM(ASOS)
13	13	GLIDE SLOPE TOWER
--	14	FUEL FACILITY
--	15	T-HANGER AND COVERED TIE DOWNS
--	16	FLOAT PLANE FACILITY
17	17	PASSENGER SHELTER, SEAPLANE FLOAT
--	18	ULTIMATE SEAPLANE PULLOUT RAMP
19	19	PETRO ALASKA INC.
--	20	FUEL FARM

LEGEND

EXISTING	ULTIMATE	DESCRIPTION
		AIRPORT PROPERTY LINE
		AIRPORT REFERENCE POINT (ARP)
		AIRPORT ROTATING BEACON
		BUILDING CONSTRUCTION
BRL	BRL	BUILDING RESTRICTION LINE (BRL)
		DRAINAGE
		FACILITY CONSTRUCTION
		FENCING
VASI	PAPI	NAVIGATIONAL AID INSTALLATION
		RUNWAY END IDENTIFICATION LIGHTS (REIL)
		RUNWAY THRESHOLD LIGHTS
34 35 3 2		SECTION CORNER
		SEGMENTED CIRCLE/WIND INDICATOR
1080		TOPOGRAPHIC CONTOURS
		WIND INDICATOR (Lighted)
		AUTOMATED SURFACE OBSERVATION STATION (ASOS)
		SURVEY MONUMENTS
		SHORE LINE
RSA	URSA	RUNWAY SAFETY AREA

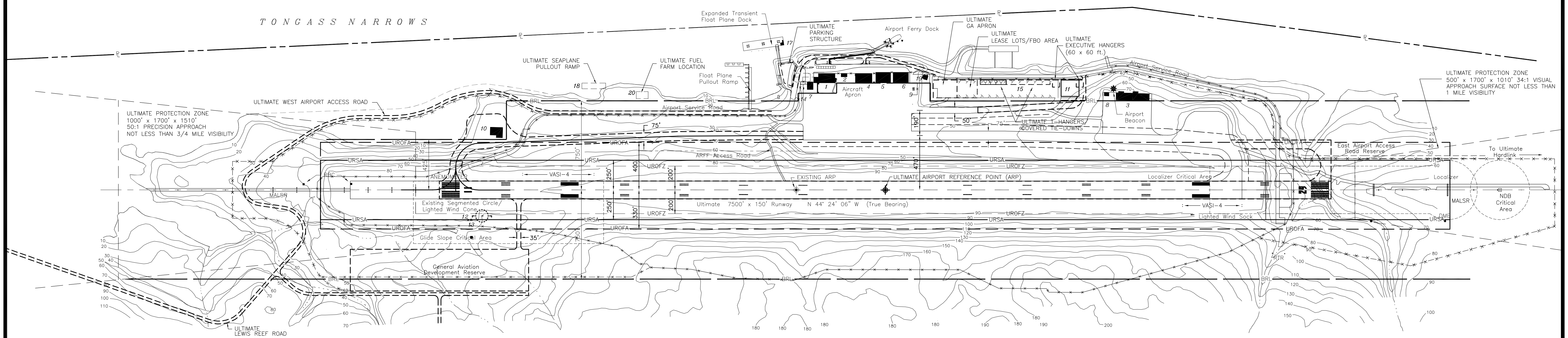
GENERAL NOTES:

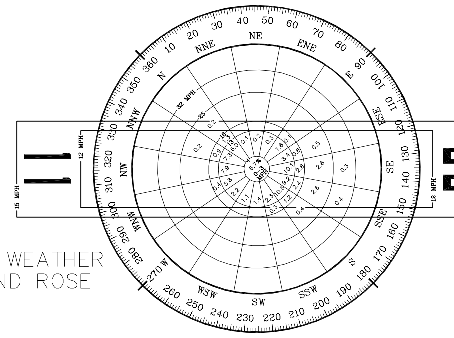
1, Details concerning airport improvements are depicted on the TERMINAL AREA DRAWING.
2. Recommended land uses within the airport environs are depicted on the AIRPORT LAND USE DRAWINGS.
3 Contours are based on Mean Lower Low Water (MLLW). Mean Tide Level (MTL) approximates Mean Sea Level (MSL) and is 8.00' above Mean Lower Low Water (MLLW).
4. Runway elevations are Mean Sea Level.
5. Latitude and Longitude are in accordance with North American Datum 1983 (NAD '83).



NON-STANDARD CONDITIONS

	STANDARD	EXISTING	ULTIMATE
RUNWAY SAFETY AREA	9500' x 500'	7900' x 300'	9500' x 500'
RUNWAY OBJECT FREE AREA	400' EITHER SIDE OF R/W CENTERLINE	TERRAIN PENETRATES ROFA TO WITHIN 280' OF R/W CENTERLINE ALONG SW SIDE FULL LENGTH OF R/W	TERRAIN PENETRATES ROFA TO WITHIN 330' OF R/W CENTERLINE ALONG SW SIDE FULL LENGTH OF R/W

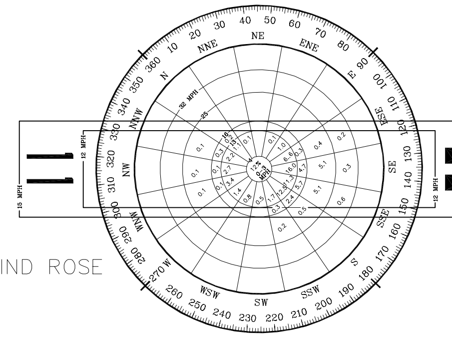




ALL WEATHER WIND ROSE

WIND DATA	12 MPH	15 MPH
Runway 11-29	98.4%	99.8%

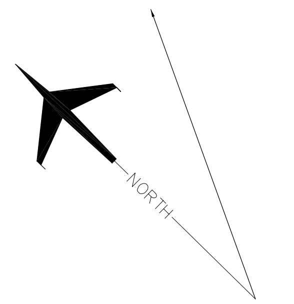
SOURCE: U.S. WEATHER BUREAU
KETCHIKAN, AIRPORT
KETCHIKAN, ALASKA
AUG.- APRIL 1941



IFR WIND ROSE

WIND DATA	12 MPH	15 MPH
Runway 11-29	97.6%	99.3%

SOURCE: NOAA NAT. CLIMATIC SERVICE
ASEVILLE, N.C.
KETCHIKAN FLIGHT SERVICE
KETCHIKAN , ALASKA
JAN-DEC 1979
9117 OBSERVATIONS



MAGNETIC VARIANCE 25' 30" East (1991)

0 400 800 1200

SCALE IN FEET

FAA AIRSPACE REVIEW NO. 00-XX

CONDITIONAL FAA APPROVAL DATE

BY:
FAA, AIRPORT DIVISION
ALASKAN REGION, AAL-600

PREVIOUS CONDITIONAL ALP FAA APPROVAL DATE 7/1/97

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

APPROVED BY:

Andy Hughes
Chief of Planning

DATE

USKH Architecture • Engineering
Land Surveying • Planning

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

KETCHIKAN INTERNATIONAL AIRPORT
ULTIMATE
AIRPORT LAYOUT DRAWING
KETCHIKAN, ALASKA

PLANNED BY: J.M.M. | DETAILED BY: C.D.P. | CHECKED BY: D.L.M.

DATE: 2000

FIGURE 8

I:\574100\DWG\USKH2000\KTNUALP2000.DWG

Airport Layout Plan (ALP). The ALP would need to be updated to reflect the modified circulation roadway.

No other effects to planned facilities have been identified.

2.3.2 Indirect Effects

As mentioned in Section 2.2, the primary indirect effect on the airport from the Gravina Access Project Alternative is the anticipated increase in vehicle traffic and parking. The primary indirect effects on planned facilities are also vehicle traffic and parking. The KIA Master Plan does have plans for potential bridge access to the airport. The plan indicates that if a bridge is constructed, a parking garage should be built to handle the anticipated parking demand at the airport. The proposed ALP set does not indicate a location. However, alternatives explored during the master planning show the same location as proposed in the Gravina Access Project alternatives. The ALP set would need to be updated and approved to reflect the ultimate location of the parking structure.

3.0 Ultimate Airport Development Considerations

This chapter presents airport development considerations that should be examined for integration into future planning for the airport as a means of integrating the Gravina Access Project alternatives into the operations at KIA. The existing airport master plan covers a 20-year planning horizon (through 2018). The life expectancy used to analyze the bridges under consideration for the Gravina Access Project is 50 to 75 years. The airport development considerations discussed in this section present potential future airport development scenarios that could be implemented after the time period covered by the current master plan. We have used the term “ultimate” to try to denote the long time-period envisioned for implementation of these ideas.

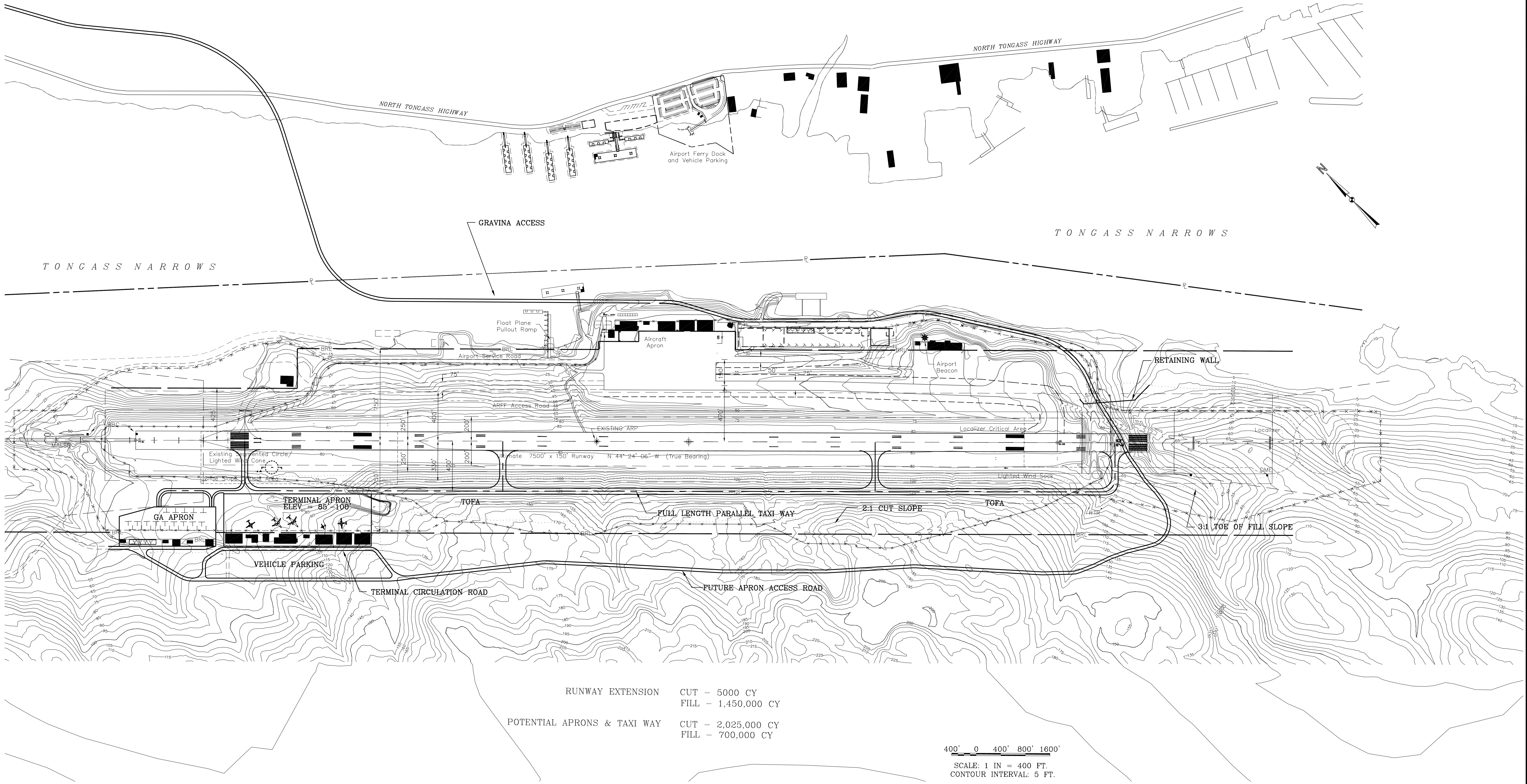
The two options considered in this chapter present modifications to the existing airport plans that would work in conjunction with improved airport access while also enhancing the operation of the airport. The optional design considerations show that the improved access alternatives can be accommodated and integrated into the airport operations and facilities and could enhance the airport’s ability over the long term (20 to 50 year period) to deliver services to travelers, tenants, employees, and carriers.

3.1 East-Side Integration Option

The east-side integration option depicts an airport development concept which assumes that airport terminal and apron development stay on the east side of the airport (as in the current master plan). It depicts how the bridge alternatives and circulation roads can be integrated into the existing planning. Fill used in the circulation and access road could bring the road (and area between the road and general aviation tiedown) up to grade. Bringing this area up to grade provides expansion room for general aviation facilities or to meet other airport needs. Figure 3 depicts the east-side integration option.

3.2 West-Side Integration Option

The west-side integration option depicts an airport development concept that explores an idea of moving the airport terminal and apron development to the west side of the airport. Relocating the terminal area and general aviation facilities to the northwest end of the runway would free up considerable space along Tongass Narrows for waterfront development. Moving the taxiway to the west side would require cutting down a considerable amount of the hillside on that side of the airport. Figure 9 depicts one possible scenario for a west-side development.



RUNWAY EXTENSION	CUT – 5000 CY	
	FILL – 1,450,000 CY	
POTENTIAL APRONS & TAXI WAY	CUT – 2,025,000 CY	
	FILL – 700,000 CY	

400' 0 400' 800' 1600'

SCALE: 1 IN = 400 FT.
CONTOUR INTERVAL: 5 FT.

NOTE:
EARTHWORK QUANTITIES DERIVED FROM 2:1 CUT SLOPES AND 3:1 FILL SLOPES

STATE	PROJECT DESIGNATION
ALASKA	67698

HDR ALASKA, INC.

STATE OF ALASKA
DEPARTMENT OF TRANSPORATION AND PUBLIC FACILITIES

WEST SIDE
POTENTIAL KETCHIKAN
AIRPORT DEVELOPMENT

DATE: 11/13/01 FIGURE 9

FILENAME: VPORT: XREF: PLOT DATE: PLOT SCALE: SCALE: DESIGNED BY: CHECKED BY: DRAWN BY: DATE: DATE: DATE:

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